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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0132401

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SYNCHROCYCLOTRON IRRADN. OF A V TARGET PRODUCED PRIME47 CA BY THE PRIME51 V(P,4N) PRIME47 CA REACTION. AFTER HNO SUB3 SOLN. AND REMOVAL OF MOST OF THE V AS AN HYDRATED OXIDE, THE PH OF THE SOLN. WAS ADJUSTED TO 3-4, AND THE SOLN. PASSED THROUGH A CATIONIC ION EXCHANGE COLUMN (DIAM. EQUALS 1 CM, HEIGHT EQUALS 5 CM) OF DOWERX-50X4 (50-100 MESH) IN NA FORM. AFTER SUBSEQUENT REMOVAL OF FE, V, AND PRIME46-48 SC, PRIME47 CA WAS ULTIMATELY REMOVED FROM THE COLUMN WITH 3N HNO SUB3 AND THE SOLN. EVAPD. TO THE DESIRED VOL. A GAMMA SPECTRUM WITH A NAI(TL) SCINTILLATION SPECTROMETER INDICATED MAX. AT ENERGIES OF 510, 810, AND 1310 KEV. THE PRIME47 CA HALF LIFE WAS 4.46 PLUS OR MINUS 0.18 DAYS.

UNCLASSIFIED

USSR

UDC 669.15.018.23-14(088.8)

BELOV, A. D., VILIM, YU. V., KOSOBOKOV, E. A., SEDOV, V. V., YAROPOLOV, I. I.,
VASIL'YEV, V. D.

"Automatic Cast Stainless Steel"

USSR Author's Certificate No 276433, Filed 15 Jul 68, Published 12 Oct 70,
(from RZh-Metallurgiya, No 4, Apr 71, Abstract No 41613P)

Translation: In order to improve machinability, steel containing the following (in %) is proposed: C < 0.12, Cr 17-20, Ni 8-11, Bi 0.1-0.2, S 0.06-0.12, P < 0.035, Si < 1.0, Mn 1.0-2.0. The presence of S and Bi in steel raises the strength of the cutting tool and improves the machinability of the steel. When using the steel (compared with 1Kh18N9TL steel) the cutting rate with 60-min strength of the tool is improved by 25-50%, or the strength of the cutting tool is increased by 2-6 times.

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UDC: 621.376.234

USSR

VILISOV, A. A., VYATKIN, A. P., MAKSIMOVA, N. K., MILOSERDOVA,
D. I., and PEKARSKIY, Ye. N.

"Sensitivity of Gallium Arsenide Detector Diodes"

Kiev, Izvestiya VUZ - Radicelektronika, vol. 14, No. 5, 1971,
pp 585-587

Abstract: This brief communication offers the results of research of the behavior of point contact and Schottky barrier diodes of electronic GaAs. In their experiments, the authors measured the sensitivity of the diodes in the three-centimeter wavelength range at a power level of $10 \mu\text{W}$ under short-circuit conditions. The tuning of the detector section or a matched transformer produced a standing wave ratio less than or equal to 2 to 2.5. The diodes tested had an electron concentration of from $1 \cdot 10^{16} \text{ cm}^{-3}$ to $1 \cdot 10^{19} \text{ cm}^{-3}$ for the point-contact, and a material of $n = 1 \cdot 10^{16}$ to $1 \cdot 2 \cdot 10^{17} \text{ cm}^{-3}$ for the Schottky barrier devices. The two types of diodes are compared with regard to their detector characteristics. Curves are given for the sensitivity of both types as functions of the bias current and the frequency. The experiments showed that the sensitivity of the diodes could be significantly increased by applying pulses of the proper shape.

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JKS
CJCS
L-73

VILISOVA, M. D.

SESSION X

X-1. STUDY OF THE MICROSTRUCTURE AND DISTRIBUTION OF INCLUSIONS IN EPITAXIAL AND GALLIUM ARSENIDE AS A FUNCTION OF THE GROWTH TIME

Article by I. G. Invent'ev, M. D. Vilisova, I. V. Ivannik, D. N. Koval'chuk, L. V. Ivannik, Yu. M. Ruzankov, M. P. Yashchenko, Tomsk, Novosibirsk, Novokuznetsk, USSR. In: Symposium on Protection of Materials, 1972, p. 156.

Novosibirsk, USSR, 12-17 June 1972, p. 156.

A study was made of the epitaxial layers of gallium arsenide grown in an open iodide system on substrates defective in dislocations from silicon in (110) direction. The growth time varied from one minute to three hours.

It was demonstrated that for all growth times beginning with one minute, the growth of the layers of the given orientation takes place by shifting of the parallel steps. There are a number of growth defects leading to disturbance in the ordered motion of the steps in which the steps, growth hills and some centers of reparation of the steps form local plateaus and loops. There is a significant rearrangement of the surface of the growing layer with growth time - the growth hills and valleys disappear, the density of the centers of reparation of the steps decreases, and the configuration of the steps changes. The rearrangement of the surface of the layers is accompanied by variation in alloying level. A clear correlation has been established between the electron concentration in the observed correlation with the centers of reparation of the steps. The observed correlation indicates that the nonuniformity of alloying and the formation of the transition layer can be connected with growth defects and their effect on the motion of the growth steps.

UDC 621.382.2

USSR

BYVALYY, V.A., VILISOV, A.A.

"Switching Charge Of Pulse Gallium Arsenide Diode"

V sb. Areenid galliya (Gallium Arsenide--Collection Of Works), Issue 3, Tomsk, Tomsk University, 1970, pp 272-274 (from RZh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No 43187)

Translation: The switching charge of a pulse GaAs semiconductor diode is investigated. GaAs with a concentration and mobility of electrons of $7 \cdot 10^{16} \text{ cm}^{-3}$ and $4070 \text{ cm}^2/\text{v.sec}$ was used to make the semiconductor dioda. After assembly of the semiconductor dioda, short pulses ($\sim 0.5 \text{ sec}$) in the forward direction were formed of a half-cycle of industrial frequency current. The dependence is presented of the switching charge of a GaAs semiconductor diode on the forming current. It is shown that the initial forming pulses decreased the magnitude of the switching charge from 2-3 to 0.5-1.5 nanocoulomb. A sharp increase of the switching charge for all the semiconductor diodes was observed with forming currents of $0.05 \pm 0.15 \text{ amp}$. Subsequent forming lead to a decrease of the switching charge. The observed changes of the switching charge were explained by a modification of the structure of the rectifying barrier in the forming process, notably by formation during the initial forming of a metal--semiconductor contact of the Schottky barrier type, and during subsequent forming of a p-n junction. It is noted that semiconductor diodes of GaAs with a switching charge $< 3-5$ nanocoulomb can be produced by forming. A. Ye.

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1/3 025 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--EFFECT OF ELECTRON IRRADIATION ON PARAMETERS OF GALLIUM ARSENIDE
PULSED DIODES -U-
AUTHOR-(G5)-BRUONYY, V.N., VILISOV, A.A., VYATKIN, A.P., KRIVOV, M.A.,
MALYANOV, S.V.
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEG. ZAVED., FIZ, 1970, 13(4), 109-13
DATE PUBLISHED-----70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS

TOPIC TAGS--GALLIUM ARSENIDE SEMICONDUCTOR, DIODE CIRCUIT, VOLT AMPERE
CHARACTERISTIC, ELECTRON BOMBARDMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1473

STEP NO--UR/0139/70/013/004/0109/0113

CIRC ACCESSION NO--AFC130403

UNCLASSIFIED

2/3 025

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AT013C403
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF ELECTRON IRRADN. ON VOLTAGE CURRENT (V-A), VOLTAGE CAPACITANCE, AND PULSE CHARACTERISTICS OF POINT CONTACT PULSED GAAS DIODES WAS STUDIED. THE DIODES WERE PREPD, FROM N TYPE GAAS WITH RESISTIVITIES OF 0.06 AND 0.9 OHM-CM, CARRIER CONCNS. OF (3-5) TIMES 10¹⁵ PRIME15 AND (1-2) TIMES 10¹⁵ PRIME15 CM PRIME3, AND MOBILITIES OF 4500 AND 5500 CM PRIME2 V SEC, RESP. AFTER ASSEMBLY COMPLETION, ELEC. FORMING WAS CARRIED OUT BY HALF PERIOD CURRENT PULSES IN THE FORWARD DIRECTION. THE DIODES WERE IRRADIATED BY 1.5-MEV ELECTRONS, AND CAPACITANCE MEASUREMENTS WERE MADE AT 30 MHZ. FROM THE V-A CURVES, IT CAN BE SEEN THAT BREAKDOWN VOLTAGE AND FORWARD RESISTANCE INCREASE, AND RECTIFICATION COEFF. DECREASES UNDER IRRADN. THE CHANGES ARE ATTRIBUTED TO AN INCREASE IN THE RESISTIVITY AT THE EXPENSE OF A DECREASE IN THE CONCN. OF CHARGER CARRIERS. CAPACITANCE DECREASES UNDER IRRADN., AND THE DEPTH OF THE CAPACITANCE MODULATION DECREASES AT THE COST OF CHANGES IN IMPURITY DISTRIBUTION IN THE SPACE CHARGE REGION (HIGHLY FORMED DIODES). THIS BEHAVIOR CAN BE EXPLAINED IN THE LIGHT OF THE THEORY DEVELOPED FOR P-N PLANE JUNCTIONS AND SCHOTTKY TYPE BARRIERS. FROM THE PULSE EXPTS., THE RECOVERY TIME (T SUBRECOV) UNDER IRRADN. INCREASES FOR SCHOTTKY BARRIERS (SLIGHTLY FORMED) AT THE EXPENSE OF INCREASING RC (R AND BAR C ARE MEAN VALUES OF RESISTANCE AND CAPACITANCE, RESP., IN THE SWITCHING PROCESS). FOR HIGHLY FORMED DIODES, BEHAVIOR OF T SUBRECOV UNDER IRRADN. IS GOVERNED BY A RELATION BETWEEN LIFETIME OF MINORITY CARRIERS (T) AND BAR RC.

UNCLASSIFIED

3/3 025

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AT01304C3

ABSTRACT/EXTRACT--AT LOW RADIATION DOSES, A DECREASE OF T SUBRECOV CAN BE
OBSD. AT THE EXPENSE OF T DECREASE, WHILE AT HIGH DOSES (SIMILAR TO 10
PRIME10 ELECTRONS-CM PRIME2) T SUBRECCV ALWAYS INCREASES.

FACILITY: SIB. FIZ.-TEKH. INST. IM. KUZNETSOVA, TOMSK, USSR.

UNCLASSIFIED

1/2 031 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EPITAXIAL GALLIUM ARSENIDE PN JUNCTIONS GROWN IN A CLOSED IODIDE
SYSTEM WITH VARYING IODINE CONCENTRATIONS -U-
AUTHOR-(04)-VILISOVA, M.D., LAVRENTYEVA, L.G., GAYDAREVA, S.P., IVLEV,
O.M.
COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(2), 31-5

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CRYSTAL GROWING, EPITAXIAL PN JUNCTION, GALLIUM ARSENIDE
SEMICCNDUCTOR, IODIDE, IMPURITY LEVEL, CRYSTAL DEFECT, CRYSTAL
DISLOCATON, X RAY ABSORPTION, ABSORPTION EDGE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0195

STEP NO--UR/0139/70/013/002/0031/0035

CIRC ACCESSION NO--A10105271

UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--30 OCT 70

CIRC ACCESSION NO--AT0105271

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EPITAXIAL GAAS LAYERS WERE GROWN BY I TRANSPORT IN A SEALED AMPUL. THE FOLLOWING PROPERTIES WERE STUDIED AS A FUNCTION OF THE I CONCN.: TRANSPORT RATE, AV. EPITAXIAL GROWTH RATE, PACKING DEFECT D., DISLOCATION D., INTEGRAL X RAY INTENSITY AT THE GA K ABSORPTION EDGE, CONCNS. AND MOBILITIES OF CHARGE CARRIERS, EPITAXIAL IMPURITY DISTRIBUTION, AND RELATIVE POSITION OF THE P-N JUNCTION WITHIN THE LAYER. ELEC. P-N JUNCTIONS ARE DISPLACED AS FAR AS 40 MU INTO THE EPITAXIAL LAYERS WHEN A ZN DOPED SOURCE IS EMPLOYED IN CONJUNCTION WITH A TE DOPED SUBSTRATE. THIS IS DISCUSSED IN TERMS OF CURRENT AUTODOPING THEORIES. THE CRYST. PERFECTION IS AN INVERSE FUNCTION OF THE GROWTH RATE.

FACILITY: SIB. FIZ. TEKH. INST.

IM. KUZNETSOVA, TOMSK, USSR.

UNCLASSIFIED

USSR

UDC: 621.374.335(088.8)

VILITIS, O. Ye.

"A Zero-Level Comparator"

USSR Author's Certificate No 280540, filed 20 Dec 66, published 9 Dec 70
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6G303 P)

Translation: A zero-level comparator is proposed for fixing the instantaneous zero values of alternating voltage. The comparator contains a push-pull selector, charging circuits, storage capacitors and an output pulse transformer. To simplify the comparator circuit and reduce the phase distortions which it introduces, a limited input voltage is fed to the ends of the primary winding of the output pulse transformer through two series-connected resistors in each arm of the selector, and the common points of connection of the resistors are connected to the bases of transistors in opposite arms of the selector.

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USSR

UDC: 621.374.5(088.8)

VILITIS, O. Y., AVRAMOV, Yu. T., SVETLAKOV, V. P.

"A Pulse Shaper"

USSR Author's Certificate No 264524, filed 20 Jan 69, published 17 Jun 70
(from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12G2h1 P)

Translation: This Author's Certificate introduces a pulse shaper which contains a shaping accumulator made in the form of a H-shaped CLC network with input connected to a DC voltage supply through a semiconductor diode in the conducting direction and a resistor. Also incorporated in the device is a discharge circuit which contains a controlled switch and load connected in series. The shaper also contains a commutating transistor whose emitter-collector circuit is connected in parallel with the input of the CLC network. To improve resistance to interference and simplify the shaper, it is equipped with a semiconductor diode connected in parallel with a capacitor, the anode of the diode being connected to the emitter of the commutating transistor while the cathode is connected to the load, and through a resistor to the base of the commutating transistor.

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1/2 008 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--ANALOGS OF GASTRIN TETRAPEPTIDE WITH A MODIFIED RESIDUE OF
TRYPTOPHAN -U-

AUTHOR--(03)-CIPENS, G., VILKA, V., ATARE, Z.

COUNTRY OF INFO--USSR

SOURCE--Khim. Prir. Soedin. 1970, 6(1), 117-19

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TRYPTOPHAN, FRACTIONATION, PEPTIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0553 STEP NO--UR/0393/70/006/001/0117/0119

CIRC ACCESSION NO--APO131176

UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0131176

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALOGS OF GASTRIN TETRAPEPTIDE TRY-MET-ASP-PHE-NH SUB2 WERE PREPD. BY SUBSTITUTION OF TRYPTOPHAN RESIDUE BY 1-NAPHTHYLPROPIONIC ACID (I), 2-NAPHTHYLPROPIUNIC ACID, (II), NAPHTHYLACRYLIC (III), AND METHYLINDOLYLAMINOPROPIONIC (IV) ACIDS. I AND III WERE COMPLETELY INACTIVE, WHILE II AND IV STIMULATED THE GASTRIC SECRETION TO THE SAME DEGREE AS THE ORIGINAL TETRAPEPTIDE. THE INTERACTION OF THE ACTIVE SITE OF GASTRIN WITH THE RECEPTUR ON THE BASIS OF ELECTROKINETIC FORCES IS POSTULATED.

FACILITY: INST. ORG.

SIN., RIGA, USSR.

UNCLASSIFIED

USSR

UDC 51

BURACHAS, A., VILKAS, E.

"Some Aspects of Optimizing Personal Consumption Considering the Simulation Model of the Behavior and Rational Norms"

V sb. Mat. metody v sotsial'n. naukakh. Vyp. 1 (Mathematical Methods in Social Sciences. Vyp. 1--collection of works), Vil'nyus, 1971 (1972), pp 61-73 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V350)

No abstract

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USSR

UDC: 51

VILKAS, E.

"The Theory of Usefulness and Decision Making"

Mat. Metody v Sotsial'n. Naukakh. Vyp. I [Mathematics Methods in the Social Sciences, No I--Collection of Works], Vil'nyus, 1971(1972), pp 13-60 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V382)

Translation: A review article.

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USSR

UDC 518.9

VILKAS, E.

"Optimality in Non-coalition Games: A Review of Approaches"

Lit. Mat. Sb., [Lithuanian Mathematics Collection], Vol 10, No 3, 1970,
pp 463-470, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971,
Abstract No. 5V510 by the author).

Translation: Concepts of optimality in non-coalition games of n persons known from the literature are discussed. If no additional assumptions are made in a game concerning the behavior of the players except "maximization of their own winnings," the problem is interpreted as a game with nature, and optimality is a certain modification of the maximin principle. For games problems themselves, the approach of Kharshan'i and an approach given earlier by the author are discussed. The psychological and sociological assumptions at the basis of the approach of Kharshan'i are demonstrated. Several new definitions of optimality are given, corresponding to other assumptions. Particular attention is given to the possibility of creating temporary coalitions of interests and to the related principles of optimality.

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USSR

VILKAS EDUARDAS

"Cooperative Solution of a Game in the Form of a Characteristic Function"

Mat. Metody v Sotsial'n. Naukakh. Vyp. 2 [Mathematical Methods in the Social Sciences, No 2 -- Collection of Works], Vil'nyus, 1972, pp 51-73 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V508).

Translation: Certain axioms are formulated which must be satisfied by a win of players in a cooperative game. A generalization of the n-kernel is given for the case when in place of the excesses

$$e(S, x) = v(S) - \sum_{I \in S} x_I,$$

the functions $r(S, x)$ are studied, having certain properties of the excesses.

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USSR

VILKAS EDUARDAS

"Formalization of the Problem of Selection of a Theoretical Criterion of Optimality"

Mat. Metody v Sotsial'n. Naukakh. Vyp. 2 [Mathematical Methods in the Social Sciences, No 2 -- Collection of Works], Vil'nyus, 1972, pp 9-31. (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V500).

Translation: A new definition of a general game, differing from that formulated by N. N. Vorob'yev (RZhMat, 1970, 11V373) is given. The criterion of optimality is taken to mean a function reflecting the game in a certain subset of its results and satisfying three axioms (realizability, domination and covariance). The realizability of the suggested principle of optimality is proven for a broad class of games.

Ye. Yanovskaya

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USSR

VILKAS EDUARDAS

"The Problem of Stability of Coalition Structures"

Mat. Metody v Sotsial'n. Naukakh. Vyp. 2 [Mathematical Methods in the Social Sciences, No 2 -- Collection of Works], Vil'nyus, 1972, pp 33-49 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V511).

Translation: A model of a coalition game with a finite number of players $\Gamma = \langle N, x_i(P)_{i \in N}, v_i(K)_{i \in K} \rangle$, where P is any division of the set of players N , $x_i(P)$ is a win of the i th player with division P of the set of players into coalitions, $v_i(K)$, $i \in K$ is a guaranteed win of a member of coalition K . Division P is called the structure. The concept of the threat and counterthreat for the structure are introduced. A stable structure is traditionally defined, in which each threat has a counterthreat. The existence of stable structures for any Γ game is proven.

Ye. Yanovskaya

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USSR

UDC 518.9

VILKAS, E. I.

"Games with Changing Winnings"

Lit. Mat. Sb. [Lithuanian Mathematics Collection], Vol 10, No 4, 1970, pp 693-703, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V491 by the author).

Translation: Noncoalition games with winnings depending on the set of "permissible" situations are studied. The existence of situations of equilibrium in such games are proven, problems of domination and reduction of such games to ordinary games by introducing dominating strategies are studied. For the particular case of separable winnings, the relationship with ordinary games and their Pareto-optimal alteration are studied.

USSR

VILKAS, E. I.

"The Problem of the Usefulness Function and Games Approaches to Systems Theory"

Issled. Sistem. Materialy Vses. Simpoz [Systems Research. Materials of All-Union Symposium], Moscow, 1971, pp 193-201, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V636).

NO ABSTRACT.

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USSR

VILKAS, E. Y.

"Non-coalition Games of n Persons"

Teoriya Igr [Games Theory -- Collection of Works], Yerevan, 1973,
Abstract No 10V453)

Translation: A system of axioms is suggested, which is used to determine the value of a non-coalition game of n persons. Based on the assumption that the players have subjective predictions of the behavior of their partners, an attempt is made to solve the problem of separation of the result of the game from the set of all equilibrium situations.

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USSR

UDC 615.787:612.014.46

KARAYEV, S. F., Candidate of Chemical Sciences, VIGHLYAYEV, YU. I., Cand KLYGUL', T. A., Candidates of Medical Sciences, and SHIKHIYEV, I. A., Doctor of Chemical Sciences, Chair of Petroleum Synthesis, Institute of Petroleum and Chemistry imeni M. Azizbekov, and Laboratory of Psychopharmacology, Moscow Institute of Pharmacology and Chemotherapy

"Synthesis and Psychotropic Properties of 1,1,1-trichloro-4-pentyn-2-ol and Some of its Derivatives"

Baku, Azerbayzhanskiy Meditsinskiy Zhurnal, No 5, May 71, pp 19-23

Abstract: A study was made of the neuropharmacological spectrum of action of compounds I-V (see table). The neuropharmacological properties of the preparations were determined in mice, using the following tests: subcutaneous corazole; subcutaneous strychnine; maximum electric shock (MES); reticulum deposit; potentiating hexenal sleep; acute toxicity. The preparations were intraperitoneally administered to the animals in doses of 0.2 ml per 20 of body weight. The experiments established that all of the preparations with the exception of V have a definite effect on the central nervous system, combining sedative, antispasmodic, myorelaxant, and sleep-inducing properties, with the antispasmodic action particularly effective in spasms induced by 1/2

USSR

KARAYEV, S. F., et al., Azerbayzhanskiy Meditsinskiy Zhurnal, No 5, May 71,
pp 19-23

corazole, strychnine, and MES. All of the preparations potentiated hexenal sleep indicating the sleep-inducing and tranquilizing component in the compounds. The toxicity of the compounds varies within a range of 500 to 1,000 mg/kg of body weight.

N ^o	Compounds	
I	$\text{CCl}_3\text{CH}(\text{OH})\text{CH}_2\equiv\text{CH}$	IV $\text{CCl}_3\text{CH}(\text{OCOCH}_2\text{N}(\text{C}_2\text{H}_5)_2)\text{CH}_2\text{C}\equiv\text{CH}$
II	$\text{CCl}_3\text{CH}(\text{OCOCH}_2\text{N}(\text{H}))\text{CH}_2\equiv\text{CH}$	V $\text{CH}_3(\text{C}_2\text{H}_5)_2\text{SiCH}(\text{CH}_2\text{C}\equiv\text{CH})_2\text{C}_2\text{H}_5$
III	$\text{CCl}_3\text{CH}(\text{OCOCH}_2\text{N}(\text{C}_2\text{H}_5)_2)\text{CH}_2\equiv\text{CH}$	

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I/2 022 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--AUTOMATIC ARRANGEMENT FOR STUDYING ANTENNA RADOMES -U-

AUTHOR--(02)-VILKOTSKIY, M.A., KRAVCHENKO, I.T.

COUNTRY OF INFO--USSR ✓

SOURCE--AKADEMIIA NAUK BSSR, DOKLADY, VOL 14, JAN 1970, P 29-32

DATE PUBLISHED----JAN70

SUBJECT AREAS--NAVIGATION

TOPIC TAGS--RADOME, ANTENNA THEORY, GRAPHIC TECHNIQUE, MEASUREMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1980/0346

STEP NO--UR/0250/70/014/000/0029/0032

CIRC ACCESSION NU--AT0048619

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AT0048619

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF AN ARRANGEMENT FOR STUDYING THE EFFECT OF AN ANTENNA RADOME ON THE CHARACTERISTICS AND PARAMETERS OF THE ANTENNA AS A FUNCTION OF THE POSITION AND ORIENTATION OF THE ANTENNA IN THE RADOME. THE PROPOSED ARRANGEMENT, WHICH CONSISTS OF AN ELECTRONOMECHANICAL SYSTEM, A PROGRAMMING DEVICE, AND AN ELECTROMAGNETIC FIELD AMPLITUDE AND PHASE METER, MAKES IT POSSIBLE TO AUTOMATICALLY MOVE, ORIENT, AND RECORD THE REQUIRED CHARACTERISTICS ON GRAPH TAPE. THE USE OF THIS ARRANGEMENT FOR STUDYING RADOMES MAKES IT POSSIBLE TO IMPROVE THE MEASUREMENT ACCURACY AND TO SHORTEN THE TIME REQUIRED FOR THE MEASUREMENTS.

USSR

UDC: 62-50.22+621.317.772

VIL'KOTSKIY, M. A., KAZARIN, A. N. (deceased), KRAVCHENKO, I. T.,
Belorussian State University imeni V. I. Lenin

"An Automatic Installation for Studying Radomes"

Minsk, Doklady Akademii Nauk BSSR, Vol 14, No 1, 1970, pp 29-32

Abstract: A device is proposed for automatically studying the effect of a radome on the characteristics and parameters of the enclosed antenna. The unit consists of two parts: an amplitude-phase meter which gives an automatic chart recording of the amplitude and phase characteristics of the electromagnetic field, and an electromechanical system which automatically fixes the phase center of the given antenna at a predetermined point in the radome enclosure and rotates the antenna through the required angle. The amplitude-phase meter is based on a bridge circuit with high-frequency tracking phase shifter. The phase shifter is the balancing element in a waveguide bridge, and is connected to 1/3

USSR

VIL'KOTSKIY, M. A., et al, Doklady Akademii Nauk BSSR, Vol 14,
No 1, 1970, pp 29-32

a servomotor by a mechanical gear train with an element with free play which can be set from 0 to 50°. A block diagram of the circuit is given as well as a description of the operating principles in the phase-recording and amplitude-recording modes. The electro-mechanical part of the unit consists of a swivel stand on which two servomotors are mounted. The first motor rotates the antenna in the horizontal plane, the second shifts the antenna along the radome radius, and the swivel stand permits rotation of the radome and enclosed antenna about the vertical axis. A system of limit cutoffs connected with the shafts of the servomotors is used for programming the device for automatic measurements depending on predetermined angular limits. When measurements have been completed, the unit automatically shuts itself off and gives a signal indicating completion of the measurement process. Amplitude recording accuracy is 5%, phase recording accuracy is 3%, the angle 2/3

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USSR

VIL'KOTSKIY, M. A., et al, Doklady Akademii Nauk BSSR, Vol 14, No 1,
1970, pp 29-32

of turn of the antenna can be set within 0.5° , and the distance
between the center of the radome and the phase center of the an-
tenna can be set within 0.2 mm.

3/3

USSR

UDC 621.315.592

Aleksandrova, G. A., Vil'kotskiy, V. A., Kornilov, B. V., Marchukov, L. V.,
Skvortsov, I. M.

"Anomalies in the Magnitude and Temperature Dependence of the Electron Mobility
in Epitaxial Layers of Gallium Arsenide"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 5, 1972, pp 983-984

Abstract: A study was made of the anomalies in the magnitude and temperature dependence of the electron mobility detected in the epitaxial layers of n-type GaAs which cannot be explained by the mechanism of scattering on the polar lattice vibrations, on ionized or neutral centers and the space charge regions of the microinhomogeneities. The anomalies were detected in a group of films which was characterized by low mobility at 300°K. The films were grown from the gas phase in the Ga-AsCl₃-H₂ system on semi-insulating GaAs substrates alloyed with chromium and oriented with respect to the (100) plane. The characteristic curves for the anomalous function $\mu = f(K)$ and the cathode luminescence spectra of the films with different mobilities are plotted. The carrier concentration in the films at 300°K measured by the Van der Pauw method [Phil. Res. Rep., No 13, 1, 1958] was $2 \cdot 10^{15}$ - $2 \cdot 10^{17} \text{ cm}^{-3}$, and the mobilities were within the limits of $150 \leq \mu \leq 2000 \text{ cm}^2/\text{volt-second}$. In the

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UDC 621.315.592

Aleksandrova G. A., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 5, 1972,
pp 983-984

investigated range of 77-300°K, the electron concentration decreased by no more than two times with a reduction in temperature. The cathode luminescence spectra of the films with the reduced values of μ are characterized by the fact that in the spectra a band must occur with a peak at 0.62-0.6 electron volts comparable to or significantly exceeding the 0.8 electron volt band ascribed to chromium. From an analysis of the cathode luminiscence spectra of the films with different values of μ at 300 and 77° K it was found that the absolute value of μ decreases by two orders as the peak of the 0.56 electron volt band shifts to the short-wave side to 0.64 electron volts. This extraordinary behavior of the mobility is attributed in part to the oxygen atoms.

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USSR

UDC 621.315.592

ALEKSANDROVA, G. A., VIL'KOTSKIY, V. A., DOMANEVSKIY, D. S., TKACHEV, V. D.

"Cathode Luminescence of Epitaxial Gallium Arsenide"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 311-315

Abstract: The edge and impurity (1.5-0.35 electron volts) cathode luminescence spectra of gas epitaxial layers of gallium arsenide of different degrees of perfection were investigated. The variations in the spectral distribution of the cathode luminescence and the relative intensity of the individual emission bands were analyzed as functions of the current carrier mobility. With a decrease in mobility the intensity of the edge cathode luminescence decreases. Redistribution of the intensity between the radiation peaks at 0.8 and 0.56 electron volts accompanied by a shift of the 0.56 electron volt band to the 0.63 electron volt region is observed. The causes of the observed variations are discussed.

The properties of epitaxial GaAs are determined only by the concentration of the oxygen participating in the formation of the crystal defects. One of the factors determining the concentration of this "structurally active" oxygen can be total perfection of the substrate material. Good correlation is always observed between the cathode luminescence spectra of the films and the substrate.

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USSR

UDC 621.382.2.002:535.576

VIL'KOTSKIY, V.A., DCHANEVSKIY, D.S., LITVINOV, V.L., LOMAKO, V.M.,
NOVOSELOV, A.M., TRACHEV, V.D., UKHIN, N.A.

"Optical And Electrical Properties Of Irradiated GaAs Diodes (Annealing)"

V sb. Radiats. fiz. nemet. kristallov (Radiation Physics Of Nonmetallic
Crystals--Collection Of Works), Vol 3, Part 2, Kiev, "Nauk.dumka," 1971, pp
44-49 (from RZh--Elektronika i vyez primeneniye, No 10, October 1971,
Abstract No 10B285)

Translation: The effect was investigated of isochronous annealing on the spectra of radiative recombination of n-GaAs p-n junctions irradiated by fast reactor neutrons. An analysis of the results obtained makes it possible to conclude that during neutron irradiation, the decrease of lifetime is determined by the regions of disorder which are effective centers of nonradiative recombination. 3 ill. 6 ref. N.S.

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USSR

UDC 537.511.5:546.19'681

VIL'KOTSKIY, V.A., DOMANEVSKIY, D.S., LOMAKO, V.M."Effect Of Irradiation By Neutrons And γ -Quanta On The Spectra Of Cathodo-luminescence Of GaAs"V sb. Radiats. fiz. nemet. kristallov (Radiation Physics Of Nonmetallic Crystals-Collection Of Works), Vol 3, Part 2, Kiev, "Nauk.duske," 1971, pp 16-16 (from RZh-Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10550)

Translation: The effect was studied of penetrating radiation on the luminescence spectra of n- and p-type GaAs with concentrations of majority carriers of 10^{14} - 10^{16} cm $^{-3}$ at 500° K with the object of clarifying the nature and processes of formation of majority luminescence centers in these crystals. Irradiation by γ -quanta of Co 60 was conducted at a temperature of 20° C and by fast neutrons at 70° C. The integral flow of γ irradiation amounted to $3.6 \cdot 10^{15} - 5 \cdot 10^{17}$ cm $^{-2}$ and by neutrons $10^{13} - 10^{17}$ cm $^{-2}$. For excitation of nonequilibrium carriers a beam of fast electrons with an energy of 50 kev was used. The spectra were plotted at an 80° K temperature. In the luminescence spectra of the irradiated specimens, the formation was observed of a new band with a maximum in the region of 1.35 ev which was accompanied by a shift of the maximum of edge radiation into the 1.495 ev region and also a shift of the 0.96 ev band into the 1.01 ev region. I.I.

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USSR

UDC: 621.376.5(088.8)

VILKOV, A. N., DANILOV, I. N., POPOV, V. K.

"A Pulse Modulator"

USSR Author's Certificate No 262166, filed 23 Mar 67, published 2 Jun 70
(from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11D463 P)

Translation: This Author's Certificate introduces a pulse modulator which contains a charging DC voltage source, an ionic commutator based on a thyatron, a video pulse train oscillator which generates signals to control operation of the commutator, and an accumulator in the form of an artificial line. To reduce the inverse voltage on the plate of the thyatron, and to improve operational reliability, the inductance of each cell of the artificial line is shunted by a resistor. V. P.

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USSR

UDC 539.4:624.012

VILKOV, K. I., SMOLIN, N. I.

"The Problem of the Strength of Inclined Sections of Bending Elements of Concrete with Porous Clay Filler"

Stroit. Mekh. i. Stroit. Konstruktsii [Construction Mechanics and Construction Structures -- Collection of Works], Gor'kiy, 1972, pp 69-71, (Translated from Referativnyy Zhurnal, Mekhanika, No 11, 1972, Abstract No 11 V1020 by M. Kh. Leybur).

Translation: Results are presented from a study of the strength and crack resistance of inclined cross sections of bending elements of concrete with porous clay filler in order to supplement and refine the norms for planning of light concrete structures. Twelve beams of rectangular cross section differing in concrete strength, type of loading and quantity of longitudinal reinforcement were manufactured and tested. The beam cross section was 48 × 20 cm, the length was 400 cm, initial span 360 cm, subsequent spans 220, 240 and 260 cm. The strength of the concrete was 144-214 kg/cm², the specific gravity 1,550 to 1,650 kg/cm³ [sic -- Tr.]. To assure rupture of the beams in inclined cross sections, their longitudinal reinforcement was

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USSR

UDC 539.4:624.012

VILKOV, K. I., SMOLIN, N. I., Stroit. Mekh. i. Stroit. Konstruktsii, Gor'kiy, 1972, pp 69-71.

excessive, using high-strength reinforcing rods. It was noted that the strength of the inclined cross sections of the beams of this concrete was less than that of elements of heavy concrete, resulting from the lower resistance of the light concrete to extension and shear. The authors assume a reduced value of coefficient $K = Q_u C / R_u b h^2$, characterizing the relative resistance of the compressed zone of the concrete in the inclined cross section, for the porous clay filler concretes. In place of the value of 0.15 used in the norms (Snip II-V. 1-62), they recommend a value of $K = 0.12$.

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USSR

UDC 539.27

VILKOV, L. V., KHAYKIN, L. S., and EVDOKIMOV, V. V., Moscow State University
imeni M. V. Lomonosov

"Electronographic Study of Molecular Structure of $P[N(CH_3)_2]_3$ and
 $P[N(CH_2)_2]_3$ in the Vapor State"

Moscow, Zhurnal Strukturnoy Khimii, Vol 13, No 1, Jan-Feb 72, pp 7-14

Abstract: Geometric parameters of the tris-dimethylamidophosphite (I) and tris-ethyleneimidophosphite (II) molecules were determined by means of gas electronography at about 100°. Concurrent study of (I) and (II) made it possible to determine whether the correlation between the magnitude of the barrier to the inversion of a pyramidal configuration of the nitrogen bonds and the average value of its valence angle is carried over to the phosphorus derivatives. Principal internuclear distances and average quadratic amplitudes of the vibrations of atomic pairs were determined from the curves of radial distribution using the least square method. Optimal rotational angles of NC_2 groups about the P-N bonds were determined. The configuration of nitrogen atom bonds is nearly planar in (I) and practically pyramidal in (II). An increased $r(PN)$ was noted in (II) as compared to (I).

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USSR

UDC 547.588.1

KHAYKIN, L. S., and VILKOV, L. V., Moscow State University imeni M. V. Lomonosov

"Molecular Structures of Acyclic Organophosphorus Compounds"

MOSCOW, Uspekhi Khimii, Vol 40, No 12, Dec 71, pp 2174-2202

Abstract: A review with 231 references. A systematic coverage of the structural data on acyclic phosphorusorganic compounds reported in literature up to 1971 is given. The geometrical parameters found in these compounds are classified in terms of the prevailing concepts on the valence state of the atom in a molecule and types of chemical bonding. On the basis of this classification some general rules of the geometrical molecular structure have been noted. It has been determined that in case of an actual example of the bond type phosphorus-element, their values may vary considerably, exceeding the experimental error. This actually is a manifestation of the influence of the immediate surroundings on these bonds. However, the problem of the interaction of atoms, which are not directly connected is difficult, because the necessary experimental data are missing. This review covers the following subheadings: valence states of the phosphorus atom; the bond lengths and valence angles in trivalent phosphorus compounds; the bond lengths and valence angles in pentavalent phosphorus compounds; and conformational isomerism in acyclic phosphorusorganic compounds.

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1/2 012 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--ELECTRON DIFFRACTION STUDY OF THE STRUCTURE OF TETRAKIS
(DIMETHYLAMINO) STANNANE -U-
AUTHOR--VILKOV, L.V., TARASENKO, N.A., PROKOFYEV, A.K.

COUNTRY OF INFO--USSR

SOURCE--ZH. STRUKT. KHM. 1970, 11(1) 129-31

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ELECTRON DIFFRACTION ANALYSIS, MOLECULAR STRUCTURE, ORGANOTIN
COMPOUND, CHEMICAL BONDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0314

STEP NO--UR/0192/70/011/001/0129/0131

CIRC ACCESSION NO--AP0103969

UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--11SEP70.

CIRC ACCESSION NO--AP0103969
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELECTRON DIFFRACTION DETN. OF
THE MOL. STRUCTURE OF SN(NME SUB2) SUB4 IN VAPOR PHASE ESTABLISHED THE
FOLLOWING BOND LENGTHS IN THE TETRAHEDRAL MOL.: SN-N 2.045, C-N 1.45,
AND C-H 1.10 ANGSTROM'S. BOND ANGLES WERE FOUND AS CNC 119 PLUS OR MINUS
3DEGREES AND SNNC 117.5 PLUS OR MINUS 1.5DEGREES ARE NEARLY COPLANAR
(SUGGESTING SP₂ PRIME2 HYBRIDIZATION), AS IN RELATED CL SUB2 PNME SUB2
AND N(SIH SUB3) SUB3.

UNCLASSIFIED

1/2 007

UNCLASSIFIED

PROCESSING DATE--11SEP70,

TITLE--ELECTRON DIFFRACTION STUDY OF THE STRUCTURE OF MOLECULES OF
ORGANOGERMANIUM COMPOUNDS WITH EMPIRICAL FORMULA C SUB2 H SUB2 GEX SUB2
AUTHOR--VILKOV, L.V., MASTRYUKOV, V.S., SHCHERBIK, L.K., DULOVA, V.G.

COUNTRY OF INFO--USSR

SOURCE--ZH. STRUKT. KHM. 1970, 11(1) 3-7

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ELECTRON DIFFRACTION ANALYSIS, MOLECULAR STRUCTURE,
ORGANOGERMANIUM COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0312

STEP NO--UR/0192/70/011/001/0003/0007

CIRC ACCESSION NO--AP0103967

UNCLASSIFIED

2/2 007 UNCLASSIFIED PROCESSING DATE--11SEP70
CIRC ACCESSION NO--AP0103967

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ELECTRON DIFFRACTION STUDY OF (C₁H₂N₂O₂)_x (SUB2 H SUB2 GEX SUB2) SUBN (I), WHERE X EQUALS ME, CL, AND I, IN VAPOR PHASE, SHOWED THAT WHEN X EQUALS ME, N EQUALS 1 AND WHEN X EQUALS CL, N EQUALS 2. FOR X EQUALS IODINE TWO SETS OF DIFFRACTION DATA WERE OBTAINED, DEPENDING ON THE VAPORIZATION TEMP. OF THE SAMPLE, CORRESPONDING TO ELECTRON DIFFRACTION CURVES CALCD. FOR N EQUALS 1 AND N EQUALS 2, RESP. A 3 MEMBERED RING STRUCTURE II IS FOUND FOR I, N EQUALS 1 AND A 6 MEMBERED RING STRUCTURE III IS FOUND FOR I, N EQUALS 2. THE PARAMETERS DEDD. BY ASSUMING RING MODELS II OR III ARE GIVEN. THE CONTROVERSY CONCERNING THE STRUCTURE OF I IS NOT FULLY SOLVED AND NEEDS FURTHER INVESTIGATION.

UNCLASSIFIED

Nickel

USSR

UDC 669.245.018.44(088.3)

PANASYUK, I. O., BRUSILOVSKIY, B. S., VILKOV, V. I., VORONIN, G. M., YEGOROV, YE. YE., YELKIN, I. S., KLIMOV, L. YA., KOVROVA, YE. A., KONTSEVAYA, YE. M., LYUBINSKAYA, M. A., MILENINA, YE. G., MIKHAYLOV, I. A., RAZUVAYEV, YE. I., SIROTKIN, A. I., SOLDATCHENKO, V. A., SPILITSKIY, R. I., SHAPIRO, S. M.

"Nickel-Chromium Base Alloy"

USSR Author's Certificate No 276418, Filed 2 Jun 69, Published 16 Oct 70 (from
RZh-Metallurgiya, No 4, Apr 71, Abstract No 41766P)

Translation: The heat-resistant alloy has the following composition (in %): C 0.03-0.1, Cr 30-40, W 3-5.5, Mo 2-4, Ti 0.5-1.5, Al 0.5-1.5, Nb 0.5-1.5, Ce 0.01-0.3, B 0.003-0.008, Ni, the rest. The alloy has increased heat resistance and also the following mechanical and physical-chemical properties at 1,100°: σ_B 8 kg/mm², δ 65%, σ_{stress-rupture} 1 kg/mm², coefficient of linear expansion 15·10⁻⁶ deg⁻¹, increase in weight after 100 hours of heating at 1,200° in the air 0.6 g/m². It is corrosion-resistant in a moist atmosphere under tropical conditions, in sea water, and in the products of combustion of highly sulfurous fuel.

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USSR

UDC 621.385.6

VILKOVA, L. P., GAYDUK, V. I., NEFEDOV, YE. I.

"Interaction of A Nonaxisymmetric Tubular Spiral Flux with Undelayed Waves in a Cylindrical Wave Guide"

Kiev, Izvestiya vysshikh uchebnykh zavedeniy--Radioelektronika, Vol XIV, No 9, 1971, pp 1009-1021

Abstract: A systematic analysis of the effects connected with the effect of the space charge in various superhigh-frequency devices using the interaction of curvilinear electron fluxes with fast electromagnetic waves. The dispersion equation is found in the linear approximations for a tubular spiral electron flux formed by a longitudinal magnetic field in a cylindrical wave guide where the flux axis cannot coincide with the waveguide axis. As an illustration of the developed theory, a more detailed analysis is performed for the case of a nonaxisymmetric flux (for interaction with waves of the H_{ok} type) and the case of an axisymmetric flux (for interaction with longitudinal E or H waves). The space charge field is considered in the quasistatic approximation.

The discussed linear theory is based on strict expressions for the
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USSR

VILKOVA, L. P., et al., Izvestiya vysshikh uchebnykh zavedeniy-Radiotekhnika, Vol XIV, No 9, 1971, pp 1009-1021

charge and current densities in curvilinear fluxes [Gayduk, Radiotekhnika i elektronika, Vol 11, No 2, 219, 1966] and on the excitation equations [Gayduk, Izv. vuzov SSSR -- Radiotekhnika, Vol 14, No 1, 17, 1971]. The theoretical characteristics permit expressions to be obtained for the coupling resistance in closed form -- in the form of quadratures or ordinary functions. Thus, it is not necessary to expand the fields excited in the flux in infinite Fourier series as is usually done when considering interaction with one E or H wave. The derived dispersion equation for the propagation constant k reduces to algebraic equations for interaction of the displaced flux with the H_{0k} wave and the axisymmetric flux with arbitrary E or H waves. In the general case it is transcendental but also can be approximately reduced to algebraic. Consideration of the quasistatic Coulomb fields indicates the presence of varied effects caused by the space charge in the spiral tubular flux. The effects connected with these waves are different on variation of the position of the centers of the electron orbits and on variation of the azimuthal number n . Thus, when $n \neq 0$, the relativism can be reduced to an increase in effectiveness of the interaction in certain cases. For a displaced flux with a small radius of the electron orbits, the effect of the Coulomb forces is quite different.

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USSR

UDC 581.1:595.7

SLEPYAN, E. I., VILKOVA, N. A., and SHAPIRO, I. D., Botanical Institute imeni V. L. Komarov, Academy of Sciences USSR

"Pathological Changes in the Structure of Developing Grains of Triticum aestivum Infested With Eurygaster integriceps, In Connection With Special Features of Its Nutritional Regimen in the Process of Ontogenesis"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 2, Mar/Apr 72,
pp 258-262

Abstract: The stink bug, Eurygaster integriceps, is one of the most dangerous pests of wheat. It damages the husk, endosperm, and starch; causes anomalies in the nuclei; and produces chemical damage by the action of its abenteric enzymes. The worst damage occurs if the wheat is infested while it is still in the early stages of development, when the following pathological changes may be observed in the five or six layers of cells immediately surrounding the puncture made by the insect: 1) starch is not formed in the cells of the first three layers, and part of these cells hypertrophy, which leads to anisocytosis; 2) the cells of these layers are characterized by saturation of the cytoplasm and insignificant vacuolization; 3) the nuclei of the cells deprived of starch and of the cells with saturated cytoplasm are deformed; they assume
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USSR

SLEPYAN, E. I., et al., Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya,
No 2, Mar/Apr 72, pp 258-262

a lobe-shaped form and are often fragmented and hypertrophied; 4) the percentage of fine-grained starch in the cells of the third to fifth layers increases, thus destroying the endosperm mosaic characteristic of this kind of wheat.

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USSR

UDC: 662.997:621.316.544.4

NOVIKOVA, I. A., VIL'KOVA, S. N., and UMAROV, G. Ya.

"Investigating the Filtering Action of Light-Stabilized Coatings"

Tashkent, Geliotekhnika, No. 4, 1971, pp 56-59

Abstract: This article is the continuation of an earlier paper (Novikova, I. A., Geliotekhnika, 1971, No. 3) in which it was shown that the mechanism in light stabilizers of protective lacquer coatings reduces principally to transfer of the excitation energy from the polymer molecules to the light stabilizer molecules. The present paper considers the filtering action of light-stabilized coatings in the screening of solar light and the artificial light of a PRK-2 lamp in the wavelength range of 220-400 m μ , the range that is most harmful to most polymers. The authors found the intensity values of the light passing through the filter by computing the reduction of the relative intensity, for a particular wavelength, due to the absorption by the light stabilizer. Tables of the relative intensity distributions of the light emitted by the lamp and the sun, and the ratio of the radiation of the light source through

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USSR

NOVIKOVA, I. A., et al., Geliotekhnika, No 4, 1971, pp 56-59

coatings of three different types to the full flux, are given. The research showed that, by using the light-stabilized lacquer screen, the light stabilizer concentration can be regulated at will depending on the depth of photochemical transformations. The authors are associated with the Physico-Technical Institute, imeni S. V. Starodubtsev, Uzbek Academy of Sciences.

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1/2 021

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--FRICTION WELDING OF METALS -U-

AUTHOR--VELL, V.I.

COUNTRY OF INFO--USSR

SOURCE--FRICTION WELDING OF METALS (SVARKA METALLOV TRENIVEM) 2ND ED.
NASHINOSTROYENIYE, LENINGRAD, 1970, 176 PP
DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--FRICTION WELDING, QUALITY CONTROL, WELD JOINT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--300 3/1721

CIRC ACCESSION NO--AM0130580

UNCLASSIFIED

STEP NO--UR/0000/70/000/000/0001/0176

2/2 021

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AM0130580

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. TABLE OF CONTENTS: PREFACE 3.
CHAPTER I. CHARACTERISTICS OF FRICTION WELDING 6. I.E. MECHANISM OF
FORMATION OF A WELDED JOINT IN THE SOLID PHASE 15. III. BASIC DATA
FROM THE FRICTION THEORY 23. IV. HEAT RELEASE IN FRICTION WELDING 33.
V. BASIC PARAMETERS AND RECOMMENDED FRICTION WELDING CONDITIONS 49.
VI. FRICTION WELDING OF PARTS FROM METALS AND ALLOYS OF THE SAME KIND
82. VII. FRICTION WELDING OF PARTS FROM DIFFERENT METALS AND ALLOYS
97. VIII. QUALITATIVE CONTROL OF JOINTS PRODUCED BY FRICTION WELDING
115. IX. EQUIPMENT FOR FRICTION WELDING 123. X. INDUSTRIAL USE OF
FRICTION WELDING 159. BIBLIOGRAPHY 170. THE BOOK DEALS WITH
THEORETICAL AND TECHNOLOGICAL PRINCIPLES OF FRICTION WELDING. IT WAS
WRITTEN FOR ENGINEERING TECHNICAL PERSONNEL WORKING ON PROBLEMS IN METAL
WELDING. IT CAN BE USEFUL ALSO TO COLLEGE AND TECHNICUM STUDENTS.

UNCLASSIFIED

USSR

UDC: 621.791.03

BOGDANOV, V.N., and VILL', V.I., All-Union Scientific Research Institute of Electric Welding Equipment

"Work of the All-Union Scientific-Research Institute of Electric Welding Equipment in Developing Welding Equipment"

Kiev, Avtomaticheskaya Svarka, No 5, May 70; pp 25-28

Abstract: A report is presented on the work of the All-Union Scientific-Research Institute of Electric Welding Equipment, organized 17 years ago in Leningrad, in creating equipment for arc and electric contact welding, developing the technology and equipment for plasma welding, cutting, and other methods for the treatment of metals, and investigation new types of welding and developing the required equipment. In the mechanization and automation of arc welding, the Institute has contributed to the improvement of the ADPG-500 and ADF-500 automatic machines and has developed new types of equipment (the ADA-300 and ADA-500 for compressed arc welding, ADPG-500 automatic machine for gas-shielded consumable electrode welding, the ATG-600 for welding aluminum and its alloys by a three-phase arc, and the USD-305 universal type device for joining metals by plasma arc). The Institute developed the MFV-63 machine for spot welding of steel piles 12 X 3 mm thick and aluminum sheets 2 X 5 mm thick. For the plasma welding cutting, and surface treatment of various steels, cast iron, and nonferrous

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USSR

BOGDANOV, V.N., et al., Avtomaticheskaya Svarka, No 5, May70, pp 25-28

metals (aluminum, copper), the APCS-1201, universal automatic machine was constructed. It operates on 380-volt AC current, has an intake of up to 300 kilowatts, is equipped with two torches using 1000 amperes (for welding) and 1500 amperes (for cutting), and is water-cooled. The automatic machine can cut sheet up to 200 mm thick at a rate of 5-70 m/hr, weld thick-walled billets and perform surface treatment of metals with a productivity of up to 3 kilogram force/minute at depths of the removable layer of up to 30 mm. A new process developed by the Institute is spin welding, which is used in various branches of industry. The Institute has also made contributions in copper and aluminum cold welding and produced the MSKhS-120 machine for this purpose. It has also created several machines for ultrasonic welding, among which the MTU-0.4 is outstanding.

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USSR

UDC 539.67

VILLEMS, Kh. B., GLUSHCHETS, A. M., KEKALO, I. B., and LIVSHITS, B. G.

"Certain Magnetic and Magnetoelastic Relaxation Effects in Invar, Governed by Carbon Atom Diffusion"

Sb. "Vnutrennuye treniye v metallicheskikh materialakh" (Internal Friction in Metallic Materials), Moscow, Izd-vo "Nauka", 1970, pp. 182-187

Abstract: The temperature dependence of relaxed and nonrelaxed initial permeability is studied. It is shown that processes inducing a temporary drop in permeability take place in the 20-200°C temperature range. It is concluded from an analysis of data on the effect of elastic vibration amplitude on Q^{-1} in the carbon peak region (200°C) that two relaxation processes take place in invar. A mechanism on the onset of the relaxation process is presented.
4 figures, 14 references.

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- 86 -

✓ Single Crystals

USSR

URG 569.1:338.12:319.176

KERALO, I. E., VILLEMS, Kh.-E., SMIROVNA, L. P., SOKOLOV, V. L., and IVANOV, I. I.

"Study of the Dynamics of the Domain Structure During Deformation and Magnetocaloric Damping of Oscillations in Single Crystals of the Alloy Fe-3% Si"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 30, No 3, Sep 70, pp 566-576

Abstract: The Fe-3% Si alloy was used in a study of the magnetocaloric damping of oscillations and investigation of the dynamics of the domain structure during twisting, allowing a number of regularities to be determined which expand our ideas of the domain mechanism of magnetocaloric damping in this material. During twisting of single crystal specimens of Fe-3% Si, the following irreversible processes occur: displacement of the 180° boundaries of the principal domains, fractionation of the initial domain structure as a result of the appearance of a pair of boundaries within the principal domains, and also complete restructuring. Comparative slight displacements of the 180° boundaries of the principal domains, as well as displacements of the boundaries of drop-shaped domains during twisting of a specimen with $\delta = 0^\circ$ caused no losses in magnetocaloric hysteresis. High magnetocaloric attenuation in specimens with $\phi = 35$ and 90° could have been 1/2

USSR

KEKALO, I. B., et al, Fizika Metallov i Metallovedeniye, Vol 30, No 3, Sep 70,
pp 566-576.

related to intensive displacement of the 100° boundaries of the principal domains or the effect of fractionation of the domain structure, which obviously results in restructuring of the internal domain structure with participation of the 90° boundaries. Restructuring of the principal domain structure in specimens with $\phi = 55^\circ$ occurred with deformations considerably exceeding the deformations for which magnetoelastic attenuation reaches its maximum.

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USSR

UDC 8.74

DOLYATOVSKIY, V., POBUKOVSKIY, M., VILLYAR, ZH.

"Automated Transmission Program in COBOL"

V sb. Teoriya i praktika mash. obrabotki inform. (Theory and Practice of Machine Data Processing — collection of works), Rostov-na-Donu, 1971, pp 6-15
(from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V637)

No abstract

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USSR

UDC 528.34.022.061.2

VIL'NER, D. G.

"Determination of Coefficient of Vertical Refraction for the Purpose of Trigonometric Leveling"

Moscow, Geodeziya i Kartografiya, No 4, 1972, pp 13-18

Abstract: The coefficient of vertical refraction is affected by two groups of factors, time-variable (mainly meteorological), and space-variable (mainly topographic). This study (1967) was aimed at determining the relative importance of the latter, and at verifying the constancy of refraction as measured in all directions at a given point and time.

The study was made from four observation points in the Arctic plains tundra, all field work and data-processing being conducted by the L'vov Polytechnic Institute and Enterprise No 9. Observations were on a 24-hour basis.

It was concluded that for all "dry-land" observations on the plains tundra there are no observable systematic deviations of refraction-field parameters at any given point and time; further, that the basic factor affecting the 1/2

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VIL'NER, D. G., Geodeziya i Kartografiya, No 4, 1972, pp 13-18

coefficient of refraction is meteorological, and that the topographic factor may be ignored in all regions having at least as good observational conditions as the plains tundra, and also in cases where elevation of the observation point is correct to within ± 0.5 m. The observations are believed to open favorable prospects for wider use of "geodetic" methods in refraction studies serving trigonometric leveling. Details of equipment, calculations and observational techniques accompany the article.

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VIL'NER, L. M., ZEYTLENOK, N. A., CHUMAKOV, M. P., KROPACHEV, V. A., and TRUKHMANOVA, L. B., Institute of Poliomyelitis and Viral Encephalitides, Academy of Medical Sciences USSR, Institute of High-Molecular-Weight Compounds, Academy of Sciences USSR

"Use of Synthetic Copolymers Derived From Vinylpyrrolidone for Interferon Induction and for Increasing Resistance to Viral Infections"

Riga, Fiziologicheski i Opticheski Aktivnyye Polimernyye Veshchestva, "Zinatne," 1971, pp 137-144

Abstract: Antiviral and interferon-inducing activities of copolymers of vinylpyrrolidone (VP) with crotonic acid (CA), crotonic aldehyde (CAL), and maleic anhydride (MA) were studied. Interferon activity was determined by intraperitoneal injection of mice with 0.5 ml. of copolymers of different concentration, followed by blood serum analysis. Analysis results showed that interferon titers were <16, 16, 32-24, 42, 128-155 for VP with CA; and <16, <16, 48, not determined, 188-252 for VP with MA 2, 4, 6, 8, and 24 hrs, respectively, after injection. Effectiveness of these copolymers was high if they were administered to mice prior to infection with tickborne encephalitis virus. However, all of them were ineffective if given to mice 24 hr after infection. Injection of a large group of mice infected with low doses 1/2

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VIL'NER, L. M., et al., Fiziologicheski i Opticheski Aktivnyye Polimernyye Veshchestva, "Zinatne," 1971, pp 137-144

of tickborne encephalitis virus with less than 100 LD₅₀ dose of copolymers tested showed that VP with CA (No 20) and VP with MA (No 2) possessed high antiviral activity (95 and 60% of mice survived). This means that copolymers with polyanionic structure were the most effective. With respect to mol. wt. the most active copolymers were those with 50 ± 200,000 mol. wt. and with characteristic viscosity of ~0.24-0.5 in 0.02 N HCl. Thus, in the case of VP with CA and MA a possibility was established of inducing interferon-production in animal blood by chemical means. Results were negative with chicken embryos and with cell cultures of chicken and mouse embryos.

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1/2 014 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--ACTION OF OXYGEN ON FERROUS CHLORIDE AT HIGH TEMPERATURES -U-

AUTHOR--(03)--TETEREVKOV, A.I., VILNYANSKIY, YA.YE., LAPSHINA, M.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(3), 487-91

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--IRON CHLORIDE, OXYGEN, TEMPERATURE EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/0305

STEP NO--UR/0080/70/043/003/0487/0491

CIRC ACCESSION NO--AP0113235

UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0113235

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DURING ACTION OF O SUB2 ON FECL
SUB2 AT 673-703DEGREES, FE SUB2 O SUB3 AND CL ARE FORMED AS WELL AS THE
INTERMEDIATE PRODUCTS, FE SUB2 CL SUB6 AND CEOCL. THE VALUE FOR THE
ACTIVATION ENERGY OF THIS PROCESS IS 11,480 CAL-HOLE.

UNCLASSIFIED

1/2 010 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--CARNALLITE HYDROLYSIS PRODUCTS IN AN ATMOSPHERE OF HYDROGEN
CHLORIDE AND WATER VAPOR STUDIED UNDER CHEMICAL EQUILIBRIUM CONDITIONS
AUTHOR--(03)--SAVINKOVA, YE.I., VILNYANSKIY, YA.YE., BICHIKHINA, L.S.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHM. (LENINGRAD) 1970, 43(3), 513-18

DATE PUBLISHED----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--HYDROLYSIS, HYDROGEN CHLORIDE, WATER, MAGNESIUM OXIDE,
POTASSIUM CHLORIDE, CHEMICAL EQUILIBRIUM

CONTRL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0733

STEP NO--UR/0080/70/043/003/0513/0518

CIRC ACCESSION NO--AP0119640
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO—AP0119640

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WHEN HEATED IN AN ATM. OF HCL AND
H SUB2 O AT 250-390DEGREES THE TITLE MINERAL HYDROLYZED ACCORDING TO THE
FOLLOWING SPECIFIC CONDITIONS: LESS THAN OR EQUAL TO 2.5PERCENT HCL AND
GREATER THAN OR EQUAL TO 370DEGREES GAVE KCL AND MGO, LESS THAN OR EQUAL
TO 2.5PERCENT HCL AND LESS THAN OR EQUAL TO 370DEGREES GAVE KCL AND MG
SUB2 NEGATIVEN (OH) SUBN, 3.5-5.4PERCENT HCL AT A WIDE TEMP. RANGE GAVE
KMGCL SUB2.5(OH) SUBC.5, AND GREATER THAN OR EQUAL 5.5PERCENT HCL GAVE
KMGCL SUB2 TIMES 67(OH) SUB0.33. FACILITY: URAL+ POLITEKH.
KNST. IM. KIROVA, SVERDOLOVSK, USSR.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--EQUILIBRIUM OF CARNALLITE HYDROLYSIS WITH THE FORMATION OF
KCL·MGL·OH· CL, SOLID SOLUTIONS IN AN ATMOSPHERE CONTAINING WATER VAPOR
AUTHOR--(CB)--SAVINKOVA, YE.I., VILNYANSKIY, YA.YE., SVIT, T.F.
COUNTRY OF INFO--USSR
SOURCE--ZH. PRIKL. KHM. (LENINGRAD) 1970, 43(4), 754-8
DATE PUBLISHED-----70
SIGHT AREAS--CHEMISTRY
TOPIC TAGS--CHEMICAL EQUILIBRIUM, HYDROLYSIS, SOLID SOLUTION, HYDROCHLORIC
ACID, CRYSTAL LATTICE STRUCTURE, OPTIC PROPERTY, POTASSIUM COMPOUND,
MAGNESIUM COMPOUND, CHLORIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/0945 STEP NO--UR/0080/30/043/004/0754/0758
CIRC ACCESSION NO--AP0131530 UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--11 DECTO

2/2 G22
CIRC ACCESSION NO--AP0131530
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EQUIL. BETWEEN THE COMPN. OF
SOLID SOLNS. KClOHCl(H, Cl) AND THE COMPN. OF GASEOUS PHASE CONTG. HCl,
H SUB2 O, AND AIR WAS STUDIED AT 220-370 DEGREES. CHEM. X RAY, AND
CRYSTALLOPTICAL STUDIES CONFIRM THE FORMATION OF SOLID SOLNS. BY THE
SUBSTITUTION IN CRYST. LATTICE OF HYDROXYL ION FOR CHLORIDE IONS. THE
SOLID SCLN. CAN BE EXPRESSED BY THE FORMULA K₂Cl_n SUB2n IN USN (OH)_n SUBn
WHERE N IS SMALLER THAN OR EQUAL TO 0.33 AND ITS VALUE CORRESPONDS TO
THE MOLE FRACTION OF MGOHCl BASED ON ALL THE UNHYDROLYZED CARNALLITE.
FACILITY: URAL. POLITEKH. INST. IM. KIROVA, SVERDLOVSK, USSR.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE—INTERACTION OF 3CAO.AL SUB2 O SUB3, 4CAO.AL SUB2 O SUB3.FE SUB2 O
SUB3, AND 2CAO.SIO SUB2 WITH CHROMIC OXIDE AT 800-1100DEGREES -U-
AUTHOR-(04)-RYABIN, V.A., VILNYANSKIY, YA.YE., SHULIMOVICH, E.D.,
AARONSKIND, V.A.
COUNTRY OF INFO—USSR

SOURCE—ZH. PRIKL. KHM. (LENINGRAD) 1970, 43(2), 440-2

DATE PUBLISHED—70

SUBJECT AREAS—CHEMISTRY

TOPIC TAGS—CHROMIUM OXIDE, OXIDATION, MOLECULAR INTERACTION, CALCIUM
OXIDE, ALUMINUM OXIDE, IRON OXIDE

CONTROL MARKING—NO RESTRICTIONS

DOCUMENT CLASS—UNCLASSIFIED

PRUXY REEL/FRAME—1993/0287 STEP NO—UR/0080/T0/043/002/0440/0442

CIRC ACCESSION NO—AP0113217

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AP0113217
ABSTRACT/EXTRACT--(U) GP-0 ABSTRACT. THE PRODUCTS OF REACTION IN THE SYSTEMS 3CAO.AL SUB2 O SUB3 NEGATIVE (4CAO.AL SUB2 O SUB3.FE SUB2 O SUB3, 2CAO.SIO SUB2)-CR SUB2 O SUB3 WERE STUDIED AT 800-1100DEGREES IN AN OXIDIZING ATM. AT 800-900DEGREES THE CR SUB2 O SUB3 IS TRANSFORMED TO CACRO SUB4. AT 1100DEGREES THE PRODUCTS ARE A MIXT OF CA SALTS OF TRIVALENT AND HEXAVALENT CR IF OXIDN. OCCURS OR CAO.CR SUB2 O SUB3 IF NO OXIDN. OCCURS. FACILITY: ZH. PRIKL. KHM. LENINGRAD.

UNCLASSIFIED

1/2 012

UNCLASSIFIED

PROCESSING DATE--02OCT70

TITLE--PREPARATION OF CHROMIUM (III) COMPOUNDS BASED ON THE INTERACTION OF
SODIUM CHROMATE SOLUTIONS WITH SULFUR DIOXIDE -U-

AUTHOR--(03)-KOVEL, M.S., BOROVSKIKH, L.A., VILNYANSKIY, YA.YE.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHM. (LENINGRAD) 1970, 43(2), 236-40

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL PRODUCTION, CHEMICAL REDUCTION, CHROMIUM COMPOUND,
HYDROXIDE, SULFUR DIOXIDE, SODIUM CHROMATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1927

STEP NO--UR/0080/70/043/002/0236/0240

CIRC ACCESSION NO--AP0108256

UNCLASSIFIED

2/2 012
CIRC ACCESSION NO--AP0108256

UNCLASSIFIED

PROCESSING DATE--02OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INFLUENCE OF A SERIES OF FACTORS ON THE COMPN. AND STRUCTURE OF PPTS. OF HYDROXIDE COMPODS. OF CR (CR CHROMATES AND HYDROXIDES), WHICH FORM UPON THE REDN. OF CHROMATE SOLNS. BY SO. SUB2 GAS, IS STUDIED. THE POSSIBILITY OF AN EFFECTIVE USE OF THE GIVEN METHOD FOR THE RECOVERY OF CHROMATE SOLNS. IN VARIOUS CHEM. PRODUCTS SUCH AS TANNING AGENTS, ELECTROLYTES, CHROMIC OXIDE, ETC. IS SHOWN.

- UNCLASSIFIED

1/2 024

UNCLASSIFIED

PROCESSING DATE--11SEP70

TITLE--SATURATION OF CHROMATE SLURRIES BY A GAS WITH A LOW CARBON DIOXIDE.

CONTENT -U-

AUTHOR--MIRDLYUBOV, B.V., RYABIN, V.A., VILNYANSKIY, YA.YE.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHM. (LENINGRAD) 1970, 43(2), 442-5

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHROMATE, SLAG, FERROCHROMIUM, CHROMIUM OXIDE, CALCIUM OXIDE,
MAGNESIUM OXIDE, SILICON DIOXIDE, IRON OXIDE, ALUMINUM OXIDE, CALCIUM
CARBONATE, CRYSTAL HYDRATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/0924

STEP NO--UR/0080/70/043/002/0442/0445

CIRC ACCESSION NO--AP0053848

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0053848
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SLAG (400 G), FROM THE PRODUCTION OF FERROCHROMIUM CONTG. CRO SUB3 22.47PERCENT, CAO 28.53, MGO 8.99, SiO SUB2 10.03, FE SUB2 O SUB3 5.49, AND AI SUB2 O SUB3 4.56PERCENT WAS GROUND TO A 150 MESH POWDER AND STIRRED INTO A SOLN. OF 9 G NA SUB2 CO SUB3 IN 700 G H SUB2 O. THE CHROMATES DISSOLVE ONLY PARTIALLY BECAUSE OF THE FORMATION OF INSOL. HYDRATES OF CHROMOALUMINATES OF CAO. FURTHERMORE, FILTRATION IS DIFFICULT BECAUSE OF COLLOIDAL HYDRATES OF ALUMINATES AND ALUMINOFERRATES OF CAO. SATG. THE PULP WITH STACK GAS 10PERCENT. NEUTRALIZATION BY CO SUB2 TO PH 8.3 CAUSES THE FORMATION OF EASY TO FILTER CACO SUB3 AND AI(OH) SUB3 AND CHROMATES ARE SET FREE. THE DURATION OF THE REACTION AND THE CONCN. OF CO SUB2 IN THE WASTE GASES ARE NOT ESSENTIAL. IN THE RESIDUE, 3CAO.AI SUB2 O SUB3.CACO SUB3.11H SUB2 O WAS DETECTED.

UNCLASSIFIED

USSR

UDC 576.851.48.095.38:576.851.315

POKROVSKAYA, M. P., EPSHTEYN-LITVAK, R. V., VIL'SHANSKAYA, F. L., RAKHIMOVA, N.G.
POSPELOVA, V. V., KUDRYAVTSEV, N. G., SIL'VERSTOVA, T. N., KALININA, A. M., and
SYADUK, V. F., Moscow Institute of Epidemiology and Moscow Municipal Sanitary
Epidemiological Station

"In vitro Antagonistic Activity of *E. coli* (Strain M-17) and *B. bifidum*
(Strain 1) Against *El Tor Cholera Vibrios"*

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 10, 1972,
pp 54-59

Abstract: The antagonistic activity of *E. coli* (strain M-17) and *B. bifidum*
(strain 1) against 11 *El Tor cholera vibrio* strains (Inaba serotype 6 and Ogawa
serotype 5) was studied in mixed cultures in vitro. During the first 6 hours
of combined cultivation of *E. coli* and a cholera vibrio strain both microbial
species grew, but the number of live vibrios began to decrease after 24 hours
and after 48 hours almost all were dead. *B bifidum* had a similar inhibiting
effect on vibrio growth. In the presence of both antagonistic strains, all
the vibrios died within 48 hours without reproducing in the initial period of
cultivation. It is suggested that the antagonistic activity of the two strains
under study might be duplicated in an intestinal biocenosis and that a prepara-
tion made from these microorganisms (a combination of colibacterin and
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POKROVSKAYA, M. P., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii,
No 10, 1972, pp 54-59.

bifidumbacterin) should, in principle, be an effective means of treating
vibrio carriers and correcting the change in intestinal microflora observed in
cholera.

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- 30 -

1/2 022

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--DEVELOPMENT OF DYSBACTERIOSIS IN THE INTESTINES AND OTHER ORGANS OF
SUBJECTS OCCUPATIONALLY EXPOSED TO THE EFFECT OF ANTIBIOTICS.

AUTHOR--(02)--VILSHANSKAYA, F.L., SHEYNEBERG, G.B.

COUNTRY OF INFO--USSR

SOURCE--GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA, 1970, NR 5, PP
25-28
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--INDUSTRIAL HYGIENE, STREPTOMYCIN, TETRACYCLINE, PENICILLIN,
GASTROINTESTINAL SYSTEM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1995/0451

STEP NO--UR/0391/70/000/005/0025/0028

CIRC ACCESSION NO--AP0116117

UNCLASSIFIED

2/2 022

CIRC ACCESSION NO--AP0116117

UNCLASSIFIED

PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE ANTIBIOTICS INDUSTRY WORKERS ARE EXPOSED TO THE EFFECT OF THEIR DUST. MEDICAL EXAMINATION OF WORKERS AND BACTERIOLOGICAL ANALYSIS OF FECES AND THE NASAL, PHARYNGEAL, OCULAR AND VAGINAL MUCOSA REVEALED TROUBLES ON THE LEVEL OF THE GASTROINTESTINAL TRACT, ATTENDED BY DYSBACTERIOSIS, TANGIBLE CONTAMINATION WITH THE CANDIDA FUNGI AND A DROP OF THE VITAMINS C SUB1, B SUB1 AND B SUB2 CONTENT IN THE ORGANISM. THE SOVIET MADE DRUG COLIBACTERIN PROVED EFFECTIVE IN TREATING INTESTINAL DYSFUNCTION AND NORMALIZATION OF STOMACHAL MICROFLORA IN WORKERS OF THE ANTIBIOTICS INDUSTRY. FACILITY: INSTITUT EPIDEMIOLOGII I MIKROBIOLOGII, VSES. INST. ANTIBIUTIKOV.

UNCLASSIFIED

Microbiology

USSR

UDC: 676.851.48.097.25

VILSHANSKAYA, R. L., KAMZOLKINA, N. B. and EPSHTEYN-LITVAK, R. V., Moscow Institute of Epidemiological Microbiology

"Neurotoxin as One of the Factors Determining the Toxicity of Escherichia coli"
Moscow, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, Vol 48, No 1,
Jan 71, pp 137-138

Translation: Two preparations were obtained from autolysates of freshly isolated cultures of E. coli: neurotoxin by precipitation with trichloroacetic acid at pH 3.5 (Buavin and Mesrobyanin, 1937) and endotoxin from the mother liquor remaining after centrifugation of the precipitated autolysates, subjected to dialysis and precipitation by alcohol (96° proof). Moreover, part of the series of neurotoxins obtained from hemolysis of E. coli cultures possessed also hemolytic capability; however, other series did not contain any determinable hemolysin. The preparations investigated in skin tests on rabbits possessed a marked sensitivity to neurotoxins. Similar preparations of neurotoxin and endotoxin were tested simultaneously on 2-4 rabbits. The toxins were introduced intracutaneously in doses of 0.1 ml of serial double cultures. Reactions within 1 and 2 days after the test with an erythema diameter of not less

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VILSHANSKAYA, F. L., et al., Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, Vol 48, No 1, Jan 71, pp 137-138

than 5 mm at the site of introduction of the toxins were taken into account. The geometric mean dose harmful to the rabbit skin (SLD_{50}) was determined by the method of Larsen and coworkers (1960). The maximum daily dose was expressed in gammas of dry amounts of toxins. All of the seven neuro- and endotoxin series were tested.

It was established that the rabbit skin is more sensitive to the action of neurotoxins, on introduction of which the SLD_{50} values were considerably lower than on the introduction of endotoxins, and maximum reaction was observed during the first 24 hours, whereas following the introduction of endotoxin the above reaction occurred on the second day after the beginning of the test. The difference between the SLD_{50} values for the neurotoxins and endotoxins was statistically significant.

Since the live cultures of *E. coli*, from which neurotoxins and endotoxins are obtained, produced necrosis on the rabbit skin when introduced in an amount of 100 million microbial cells (minimum necrosis-producing dose), the question

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VILSHANSKAYA, F. L., et al., Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, Vol 48, No 1, Jan 71, pp 137-138

arose as to whether the necrotic effect of the live cultures was related to the toxins resulting from them. Knowing in each case the yield of one or the other toxin from the microbial cells (neurotoxin 6.8-19.7, endotoxin 0.4-17.1 per cent of dry weight), the probable content of each of them in 100 million microbial cells was calculated. For neurotoxins this value exceeded several times the corresponding SLD₅₀ and the probable amount of toxin in 100 million microbial cells was either very small or did not exist.

The data obtained made it possible to consider doubtful the role of endotoxins in the emergence of the necrotic reaction following the introduction of live cultures. However, even neurotoxins in the amounts supposedly present in live cultures (1.7-49.3 γ in 100 million microbes) cannot by themselves cause necrosis on the rabbit skin (necrosis sets in with the introduction of 200-300 γ of neurotoxins). This prompted us to determine whether the necrosing effect of the live cultures was not a synergistic effect of neurotoxin and endotoxin. To test this hypothesis, 0.2 ml of a mixture consisting of equal volumes of

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VILSHANSKAYA, F. L., et al., Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, Vol 48, No 1, Jan 71, pp 137-138

diluted analogous neurotoxins and endotoxins was introduced subcutaneously to the rabbits. Nine Mixtures in all were tested. No exacerbation of the skin reaction was observed in any of the cases.

The results obtained did not exclude, however, the possible participation of part of the neurotoxins in the emergence of the dermonecrotic reaction. The fact that not all neurotoxins obtained from hemolysis of *E. coli* cultures possessed a hemolyzing capacity indicated the lability of hemolysin and its possible breakdown during extraction from microbial cells. Apparently, the toxicity of live *E. coli* is due more to the neurotoxins than to the endotoxins. This is indicated by the hemolyzing capability which we established for part of the neurotoxins, by the great sensitivity of the rabbit skin to them, and by the fact that the speed of the reaction to the neurotoxins does not differ from the speed of the reaction to live cultures.

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Information Theory

USSR

V UDC 621.39.001.4:658.1-52:681.32

VIL'SHANSKIY, G. S.

"Problems of Testing Data Exchange System in Automated Control Systems"

Bol'shiye Inform. Upravl. Sistemy (Large Information-Control Systems - Collection of Works) pp 130-138, Moscow, 1969 (from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 2, 1970, Abstract No 2A487 by V. R.)

Translation: Problems are discussed concerning the performance of tests of communications channels in automatic control systems (ACS). For data transmission systems, additional characteristics must be introduced -- peak noise, transmission reliability, brief interruptions of communications -- the last two of which are of interest to the consumer. These characteristics are univariate distribution functions and are sufficient for evaluation of a number of important data transmission system indicators. Various methods of performing tests and recording the conditions of communications channels are analyzed. Methods of decreasing the recording error in tests of communications channels are investigated. Results are presented of statistical tests of telegraph communications channels. In particular, sharp changes in communications channels over short periods of time are noted. The instability of channel character-

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VIL'SHANSKIY, G. S., Bol'shiye Inform. Upravl. Sistemy, pp 130-138,
Moscow, 1969 (from Referativnyy Zhurnal Avtomatika, Telemekhanika i
Vychislitel'naya Tekhnika, No 2, 1970, Abstract No 2A487 by V. R.)

istics indicates the necessity of combined tests of communications
channels and ACS. Three illustrations and eleven bibliographies.

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Aluminum and Its Alloys

USSR

UDC 669.71.018.9

VILSON, D., KHUR, P., GOBL, M.

"Electric-Slag Remelting of Aluminum-Magnesium Alloys"

Elektroshlak. Pereplav [Electric-Slag Remelting -- Collection of Works],
Moscow, Metallurgiya Press, 1971, p 253-261. (Translated from Referativnyy
Zhurnal Metallurgiya, No 3, 1972, Abstract No 3G139 by the authors).

Translation: Results are presented from laboratory experiments on electric-slag remelting using direct current of different polarities. Various slag systems are studied, including the fluorides of K, Ce, Li, Rb, Na, B, etc.
3 figs; 1 table; 3 biblio refs.

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USSR

UDC 536.46:533.6

LISITSYN, V. I., PIROZHENKO, A. A., VILYUNOV, V. N.

"On the Induction Period in the Combustion of a Disperse System"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works),
Moscow, "Nauka", 1972, pp 186-190 (from RZh-Mekhanika, No 3, Mar 73, Abstract
No 3B934)

Translation: Criteria for the applicability of a steady-state heat transfer coefficient to describe heat exchange between particles and a gas are discussed. Quasistationary representations of the course of inert (from radiation) and chemical heating are proposed on the basis of an analysis of combustion by a flow of radiant energy. Temperature profiles of both stages are matched with an accuracy up to the continuity of the first derivatives. It is possible for the process to occur in combustion regimes only by combustion when heat losses deep in the cold layers are inconsiderable. The time for the conversion of the surface from a heat source into an outlet is determined by the incandescent surface in ignition regimes. The curvature of the surface has no effect on

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USSR

LISITSYN, V. I., et al, *Goreniye i vzryv*, Moscow, "Nauka", 1972, pp 186-190
processes in the chemical boundary layer and takes on important meaning for
the heating zone: critical conditions are shown. The agreement between com-
puter calculations and the approximate calculations is satisfactory in both
regimes. 7 ref. Authors' abstract.

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USSR

VILYUNOV, V. N., RUDNEV, A. P., Tomsk

UDC 536.46+662.311

"Concerning Necessary Conditions of Stable Burning of Powder in a Semi-closed Chamber"

Moscow, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 6, Nov/Dec 72, pp 90-98

Abstract: An investigation is made in the linear approximation of low frequency stability of the stationary mode of burning of powder in a semiclosed chamber with regard to incomplete combustion, thermal losses to the walls and dynamic erosion. Necessary conditions are found for stability of combustion. Qualitative conclusions are drawn to the effect that incomplete chemical reactions, thermal losses and erosion exercise a destabilizing influence on the combustion process. Of three possible stationary modes, only two are stable. The existence of combustion limits with respect to pressure is observed.

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USSR

UDC 621.793.3:669.245'28'781

VAL'SYUNENE, YA. I., PROKOPCHIK, A. YU., KIMENE, D. P., and VILJUTENE, V. A.
"Preparation of Tri-Component Ni Coatings by Chemical Methods"

Kaunas, Tr. AN LitSSR (Works of the Academy of Sciences LitSSR), No 2(69),
Series B, 1972, pp 3-16 (from Referativnyy Zhurnal -- Khimiya, No21(II), 1972,
Abstract No 21L313 by E. Z. Napukh)

Translation: Conditions for the chemical deposits of coatings and some physical
and mechanical properties of Ni-B alloys containing Mo, W, Fe, and Re are dis-
cussed. Alloys under consideration can be deposited under industrial conditions
from alkaline solutions containing Ni^{2+} , reducer $NaBH_4$, stabilizer $K_2S_2O_5$,
ethylenediamine (individually or mixed with tartarates), and Na_2MoO_4 , K_2VO_4 ,
 $NaReO_4$, or $FeSO_4$ salts, depending on the alloy composition. The concentration
of Re in individual alloy reached 20 weight %, Mo 7 weight %, W 9 weight %, Fe
60 weight %. The concentration of B in all cases was from 3 to 7 weight %.
All alloys were semilustrous, with low porosity, and their microhardness after
thermal treatment was within 1050-1500 kg/mm². All of them were nonmagnetic,
with the exception of Ni-Fe-B alloy.

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USSR

UDC 621.78.061+06

VIL'YAMS, O. S., Candidate of Technical Sciences, SOL'SHOVA, N. M., Engineer,
SADOROVA, T. G., Engineer, and SIGAL, T. I., Engineer, Nikopol' Southern Pipe
Plant

"Effect of Vacuum Heat Treatment on the Grain Size and Properties of Pipes Made
of Austenitic Steel".

Moscow, Stal', No 10, Oct 70, pp 938-941

Abstract: During heating of Kh18Ni10T, Kh18Ni9, and EI847 austenitic steels in a vacuum furnace at a residual pressure of 10^{-3} mm Hg the process of recrystallization occurs at temperatures 100 degrees lower than during heating in an ordinary electric furnace in an air atmosphere. Vacuum-furnace-heated steel possesses large-grain structure and higher ductility than that of ordinary-furnace-heated steel, and also higher density. The intensive growth of grain during heating of steel in vacuum can be explained by the accelerated diffusion of carbide and carbonitride phases and degassing of the metal, and also, apparently, by the intensification of diffusion movement of atoms, vacancies, and dislocations. The vacuum heat treatment of pipes at temperature of 900°C . (instead of 1050°C under ordinary conditions) was tested under production conditions and produced good results.

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USSR

UDC:536.468

VILYUNOV, V. N., USHKOV, V. M., SHRAGER, E. R., Tomsk

"Ignition of a Cylindrical Channel of Condensed Material in a Semiclosed Volume"

Novosibirsk, Fizika Gorenija i Vzryva, Vol. 6, No. 3, Sep 70, pp. 311-317

Abstract: A simple statement of the problem of the variation of pressure in a channel of condensed medium burning stably in a semiclosed volume is studied. It is assumed that only a comparatively small portion of the condensed material is ignited. The subsequent combustion process is limited primarily by propagation of the flame along the material. Graphs are presented showing the change in pressure, local speed of sound and local flow rate.

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VIL-VIL'YAMS, I. F.

HUMAN CARDIOVASCULAR SYSTEM REACTIONS TO SIGN-VARIABLE TRANSLATE ACCELERATIONS

Article by Yu. B. Shul'man and I. F. Vil'v'yam
Submitted for publication 11 January 1972]

UDC 612.176.014.47:531.173

Abstract: The cardiovascular effect of continuous acceleration was studied on nine test subjects during 30 additional rotations of centrifugal accelerations resulted from a combination of angular velocity of the body about 3 to 7.2 and 40°/sec. Cardiographic and phonemographic recordings were disturbed. Disturbances of cardiotac rhythms were observed, as well as periodic changes in the form of cardiographic parameters and peripheral pulse induced by changes in the direction and peripheral pulse induced by a combination of centripetal accelerations of the body about its longitudinal axis constituting a complex mechanical factor whose physical essence involves appearance of a moment of constant displacement of the total acceleration vector.

The number of studies on body physiological reactions during sign-exposures, etc., subjected to either single or multiple, but discontinuous

Method.

Thirty-nine experiments (50 rotations) were carried out using a males, earlier subjected to centrifugal accelerations of nine healthy subjects.

1975 5-557

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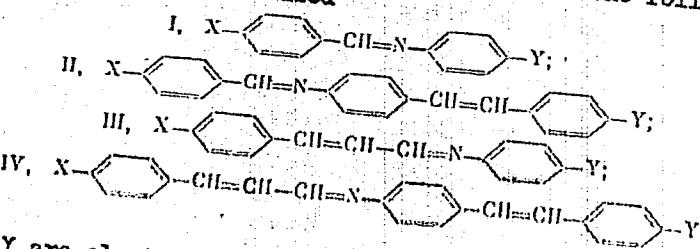
UDC 547.574.4+537.37

AGRACHEVA, YE. B. and VIMENSKAYA, T. A., Moscow Textile Institute

"The Effects of Conjugation on the Luminosity of Azomethines. II"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 11, 1972, pp 2526-2531

Abstract: The absorption and luminescent spectra of the following four series of azomethines were studied



where X and Y are electron donor and electron acceptor groups, such as $\text{NO}_2\text{CH}_3\text{O}$ and $(\text{CH}_3)_2$. Four compounds in each series were prepared such that
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AGRACHEVA, YE. B. and VIMENSKAYA, T. A., Zhurnal Obshchey Khimii, Vol 42(104),
Vyp 11, 1972, pp 2526-2531

X and Y formed the following pairs: donor-acceptor, acceptor-donor, donor-donor, and acceptor-acceptor in each series. The strongest bands were seen when X was a donor, that is for the combinations of donor-acceptor and donor-donor. The conjugation of the overall system was increased only by the increase in the conjugation of the amine part. Increase in the conjugation in the aldehyde part did not influence the overall conjugation of the molecule. The IR spectra are shown for each of the 16 compounds and the physical properties are given for those azomethines not previously described in the literature.

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USSR

SIDORKIN, Yu. G., VIVAROV, G. S.

UDC: 681.327

"Automatic Fluidic Reader"

Pnevmatich. Sredstva i Sistemy Upr. [Pneumatic Devices and Control Systems -- Collection of Works], Moscow, Nauka Press, 1970, pp 317-321 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, 1970, Abstract No 10B237, by T. Ya.)

Translation: A device based on fluidic elements is described for input of information from punched cards to a computer. The device operates with 80-column cards; reading is performed in the columns either automatically in the stepping mode or manually by pressing buttons. The device contains two main units: the reading unit and the card transport unit, the latter based on the card transport unit in a series-produced verifier, the K-80-6. The reading unit contains a set of "nozzle-receiver channel" elements; a jet of air passes freely through those elements corresponding to the holes in the card but is blocked at locations where there are no holes. It is possible to read a limited area of the field of the card. Three illustrations.

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USSR

Ion Exchange

UDC 669.296:543.546.6

GRIMBERG, A. N., VINAROV, I. V., KUSHNIRSKAYA, YE. I.

"Kinetics of Desorption of Hafnium and Zirconium from the KU-2 Cation-Exchange Resin by Sulfuric Acid"

Moscow, Zhurnal Fizicheskoy Khimii, Vol XLVI, No 1, 1972, pp 34-37

Abstract: A study was previously made of the desorption kinetics of hafnium [I. V. Vinarov, et al., Zh. fiz. khimii, No 41, 2894, 1969] in which it was established that during the initial period the process takes place in the intradiffusion region. A study of the desorption kinetics of zirconium by a normal solution of sulfuric acid as a function of a number of external parameters and the application of the "discontinuity" method has now demonstrated that during the initial period, this process also takes place in the intradiffusion region but then shifts to the mixed region. The internal diffusion coefficients were determined by the Patterson and Boyd equations. The temperature coefficients and activation energies of desorption of zirconium were calculated. The possible effect of chemical kinetics is noted. Graphs are presented showing the variation of the desorption rate of zirconium with a discontinuity 10 minutes after the beginning of the experiment, the desorption rate of zirconium with a discontinuity 30 minutes after beginning the experiment, U as a function of $t^{1/2}$ for different grain sizes of the ion-exchange

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GRINBERG, A. N., et al., Zhurnal Fizicheskoy Khimii, Vol XLVI, No 1, 1972, pp
34-37

resin and U as a function of $\tau^{1/2}$ at various temperatures [$U = c/c_{\text{equil}}$]. The experimental data on the effect of the grain size of the ion-exchange resin and the temperature show that with an increase in temperature the equilibrium is reached faster. In practice, the grain size of the ion-exchange resin has no effect on the time of reaching equilibrium. The apparent activation energy calculated by the Arrhenius equation for ion-exchange resin fractions with $r_{\text{ave}} = 0.027$ and 0.015 cm are 2.93 and 2.07 kcal/mole, respectively. These small activation energies are characteristic of diffusion processes.

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USSR

UDC 541.123.59:543.544;6:661.883.

1-2

GRINBERG, A. N., and VINAROV, I. V.

"Equilibrium of the Ion Exchange Sorption of Zirconium and Hafnium From Nitric Acid Solutions on the Cation Exchange Resin KU-2"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 46, No 5, May 72, pp 1185-1187

Abstract: The equilibrium of the ion exchange sorption of zirconium and hafnium from nitric acid solution on the hydrogen form of KU-2 cation exchange resin has been investigated. It has been shown that the results obtained fit the Nikol'ski equation. Exchange constants for zirconium ($n_2 = 1$) and hafnium ($n_2 = 2$) were found to be 3.77×10^{-3} and 3.44×10^{-3} respectively, n_2 being the charge of the ion.

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AUTHOR--(03)-NAZARENKO, V.A., LEBEDEVA, N.V., VINAROVA, L.I.

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